Concepts and Principles of Pest Management
1. Understanding the Agricultural Ecosystem

• Agro ecosystem contains a lesser diversity of animal and plant species than forests.

• Intensively manipulated by humans and subject to sudden alteration - ploughing and treatment with pesticides.

• More susceptible to pest damage.
2. Planning the agroecosystem

- Applied agroecosystem planning should anticipate pest problems and ways to avoid them.
- Crop variety should not be grown if it is known to be unusually susceptible to pest attack, thereby intensifying the need for control activity.
- Ex:
  1. **Soybean:** Pubescent type- resistant to potato leaf hopper, *Empoasca fabae.*
     Glabrous type - susceptible to potato leaf hopper.

  2. **Cotton:** Pubescent type- resistant to potato leaf hopper, *Amrasca biguttula biguttula.*
     Glabrous type – susceptible to potato leaf hopper.
3. Cost/ benefit and Benefit/ Risk:

- Farmers - more concern about Cost/benefit.
- Depends on the decisions -
  Varies with the crop produce,
  method of production and
  geographical location of production unit.

i. Cost /benefit: Should be >1.

ii. Benefit/ Risk: Provides a means for assessing the relevant economic benefits versus the risk in pesticide control.
4. Tolerance of Pest Damage:

- Economic threshold is probably the best known term and most widely used.

- Economic threshold level (ETL):
  Population density at which control measures should be implemented to prevent an increasing pest population.
5. Leaving a pest residue

- Important to leave a permanent pest residue, below the economic threshold.

- Concept is to suppress a pest but not annihilate the pest.
6. Timing of the treatments

- Crucial problem in successful pest management is the proper timing of insecticide treatment.

- Based on need and a single spray properly timed can often prevent excessive spraying.

- **Ex:** Use of pheromone traps for activity of adult.
7. Public understanding and acceptance

- Educating people about pest management is the most important way to deal with insect pest problem.

- No programme is any more successful than the degree of commitment made by the people involved.